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TITLE: Mounting Frame and Mirror Assembly for a Flat Panel Display

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention generally relates to a mounting frame for a flat panel display, and in particular relates to a mounting frame and mirror assembly for a flat panel display, having a one-way mirror for selectively obscuring the flat panel display when the display is not activated.

2. Description of the Related Art

Cathode ray tubes have been used for many years in a

variety of display devices including television sets. More recently, flat panel displays such as plasma display panels have been developed. Various mounting frames have been devised for attaching these flat panel displays onto a
5 vertical support structure such as a wall. As unobtrusive as some of these flat panel displays are, these displays and their associated mounting frames may detract from the décor of a room in which they are situated. Moreover, they needlessly detract from the décor of the room when the flat
10 panel display is not being used to display an image produced by the display device. Accordingly, there is a need for a mounting frame and mirror assembly for a flat panel display, having a one-way mirror for selectively obscuring the flat panel display when the display is not activated, in order
15 that the mounting frame and mirror assembly, and the flat panel display enclosed therein, will appear to be a decorative mirror, and not needlessly detract from the décor of the room in which they are situated.

A variety of mounting frames for display devices have
20 been disclosed. For example, United States Patent No. 6,480,243 to Yamamoto appears to show a mounting frame for a flat panel display, wherein the mounting frame is selectively attached to an opening formed within an existing wall. Additionally, United States Patent No. 5,844,635 to Kim
25 appears to show a mounting frame for a cathode ray tube. Moreover, United States Patent No. 5,657,563 to Lane appears to show a mounting frame for a picture having a one-way

mirror and a back-light for illuminating the picture.

Furthermore, United States Patent No. 5,943,801 to Wilkson appears to show a mounting frame having a plurality of lights for providing uniform backlighting for a decorative display.

5 Also, United States Patent No. 5,555,654 to Hermann appears to show a mounting frame having lighting to illuminate glass etchings.

While these devices may be suitable for the particular purpose employed, or for general use, they would not be as
10 suitable for the purposes of the present invention as disclosed hereafter.

SUMMARY OF THE INVENTION

It is an object of the invention to produce a mounting frame and mirror assembly which may be fitted over an existing flat panel display of a display device such as a television set, in order to frame the flat panel display in an aesthetically pleasing manner. Accordingly, the mounting frame and mirror assembly is provided with a visually attractive mounting frame which frames the flat panel display in an aesthetically pleasing manner.

It is another object of the invention to produce a mounting frame and mirror assembly which selectively obscures the flat panel display when the flat panel display is not activated. Accordingly, the mounting frame and mirror assembly has a one-way mirror fitted within the mounting frame. When the flat panel display is projecting an image, the image is easily seen through the one-way mirror. However, when the flat panel display is not being utilized to project an image, the darkened flat panel display is obscured by a reflective surface of the one-way mirror, and the mounting frame and mirror assembly and the enclosed flat panel display appear to be merely a decorative mirror.

Further objects of the invention will become apparent in the detailed description of the invention which follows.

The invention is a mounting frame and mirror assembly for use in conjunction with an existing flat panel display of a display device such as a television set. The mounting

frame and mirror assembly comprises a mounting frame, and a one-way mirror attached within the mounting frame. After mounting the flat panel display to a wall, the mounting frame is selectively extended over the flat panel display. The
5 images projected by the flat panel display upon activation of the display device are easily seen through the one-way mirror. When the display device is inactivated, the reflective surface of the one-way mirror obscures the flat panel display, and the mounting frame and mirror assembly and
10 the flat panel display appear to be a decorative mirror. To the accomplishment of the above and related objects the invention may be embodied in the form illustrated in the accompanying drawings. Attention is called to the fact, however, that the drawings are illustrative only. Variations
15 are contemplated as being part of the invention, limited only by the scope of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, like elements are depicted by like reference numerals. The drawings are briefly described as follows.

FIG 1 is a perspective view of a mounting frame and mirror assembly.

FIG 2 is a perspective view of the mounting frame and mirror assembly, as in FIG 1, after being selectively fitted over a flat panel display of a television set.

FIG 3 is a front elevational view of the mounting frame and mirror assembly, wherein the edges of a one-way mirror are indicated by hatched lines.

FIG 4 is a vertical cross-sectional view of the mounting frame and mirror assembly.

FIG 5 is a vertical cross-sectional view of the mounting frame and mirror assembly positioned to be extended over a flat panel display which has been rigidly attached to a vertical support structure.

FIG 6 is a vertical cross-sectional view of the mounting frame and mirror assembly as in Fig 5, after it has been extended over the flat panel display.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG 1 illustrates a front view of a mounting frame and mirror assembly 10, for use in conjunction with an existing substantially rectangular flat panel display of a television set or other display device. The mounting frame and mirror assembly 10 comprises a mounting frame 11 and a substantially flat, rectangular one-way mirror 18 attached to the mounting frame 11. The one-way mirror 18 has two opposing surfaces, one of which is a reflective surface. After the flat panel display has been rigidly mounted to a vertical support structure such as a wall, the mounting frame and mirror assembly 10 is fitted over the flat panel display in order to substantially frame the flat panel display within the mounting frame 11, and to selectively obscure the flat panel display with the reflective surface of the one-way mirror 18, as will be described.

The mounting frame 11 has a substantially rectangular, peripherally located wall flange 12, a substantially rectangular mirror flange 16, and four frame walls 14 extending diagonally therebetween. The frame walls 14 include two parallel and uniformly separated vertical frame walls 14V, and two parallel and uniformly separated horizontal frame walls 14H. The frame walls 16 are sized to accommodate the width of the particular flat panel display being used in conjunction with the mounting frame and mirror assembly 10. The wall flange 12, the mirror flange 14, each

of the frame walls 16, and the mirror 18, have outer surfaces 12E, 14E, 16E, and 18E respectively, and inner surfaces 12I, 14I, 16I, and 18I, respectively. After the mounting frame 11 has been selectively fitted over the flat panel display, the inner surfaces 12I, 14I, 16I, and 18I face the vertical support structure, and the outer surfaces 12E, 14E, 16E, and 18E face a viewer of the flat panel display. The outer surfaces 12E, 14E, 16E, and 18E are visible in FIG 1. The mirror flange 16 has edges 16F which define an opening 23 through which the one-way mirror 18 is visible.

FIG 2 illustrates a front view of the mounting frame and mirror assembly 10, as in FIG 1, after being fitted over a flat panel display 30 of a television set. The flat panel display 30 has a front surface 30F which faces the viewer.

The flat panel display 30 has been activated by the user turning on the television set, thereby producing an image 32 which is projected onto the front surface 30F. Because the image 32 is comprised of light, the image 32 is easily seen through the one-way mirror 18. When the television set is turned off, however, the image 32 is no longer projected onto the one-way mirror 18, and the darkened flat panel display 30 is substantially obscured by the reflective surface of the one-way mirror 18. Accordingly, when the television set is turned off, the mounting frame and mirror assembly 10, and the flat panel display 30 enclosed therein, appear to be simply a decorative mirror, and will accent the décor of the room.

FIG 3 illustrates a front view of the mounting frame and mirror assembly 10. The one-way mirror 18 has edges 18E, and is attached in proximity to its edges 18E to the inner surface 16I of the mirror flange 16. A variety of attachment methods are contemplated for attaching the mirror 18 to the mirror flange 16, including the provision of mirror mounting brackets and/or the provision of lateral slotted grooves within the horizontal portions of the mirror flange 16, for selective insertion therein of the edges 18E of the mirror 18.

FIG 4 illustrates a vertical cross-sectional view of the mounting frame and mirror assembly 10. The mounting frame and mirror assembly 10 has four bracketing walls 21 extending between the mirror flange 16 and the wall flange 12. The bracketing walls 21 together define a rectangular enclosure 19 for selectively accommodating the flat panel display 30, as will be described. Two of the bracketing walls 21 are visible in FIG 4.

FIG 5 illustrates a view wherein the mounting frame and mirror assembly 10 is positioned to be fitted over a flat panel display 30 having a rear surface 30R which has been rigidly attached to an existing vertical support structure 34 by the use of threaded screws 36. The flat panel display 30 has an associated electrical cord 37 which terminates in an electrical connector 39. The electrical cord 37 extends from the television set, not shown, and is selectively inserted into the flat panel display 30 in order to power the flat

panel display 30. The front surface 30F faces the viewer of the flat panel display 30. The flat panel display 30 additionally has a top 30T, a bottom 30B, and two sides 30S, each of which extends between the front surface 30F and the rear surface 30R. The rectangular enclosure 19 defined by the bracketing walls 21 is being extended over the flat panel display 30.

FIG 6 is a view of the mounting frame and mirror assembly 10 as in Fig 5, after being fully extended over the flat panel display 30. The front surface 30F of the flat panel display 30 has peripheral edges which are pressed substantially flush against the inner surface 16I of the mirror flange 16. The inner surface 12I of the wall flange 12 is substantially flush against the vertical support structure 34. The electrical connector 39 of the electrical cord 37 has been inserted into the flat panel display 30 in order to power the flat panel display 30. It is contemplated that the wall flange 12 may additionally be provided with a plurality of openings extending fully therethrough, in order that a threaded screw may be selectively extended into each of the openings and threaded into the vertical support structure 34, in order to secure the mounting frame 11 to the vertical support structure 34.

The mounting frame and mirror assembly 10 is provided in a variety of shapes and sizes in order that it may be used with variously sized flat panel displays 30. The mounting frame 11 may be constructed from any number of durable

materials, including lightweight metals, plastics, or wood. It is contemplated that the mounting frame 11 may be provided with ventilation holes extending fully therethrough, for dissipating the heat produced during operation of the flat panel display 30. Although most of the description of the mounting frame and mirror assembly 10 is centered upon use in conjunction with a flat panel display 30 of a television set, the mounting frame and mirror assembly 10 is equally suitable for use in conjunction with the flat panel displays 30 of other display devices.

The one-way mirror 18 is preferably the "Eclipse Advantage" mirror produced by Pilkington. The color of the mirror is preferably grey. The existing "Eclipse Advantage" mirror is processed in order to increase its reflectivity. In particular, the reflective silver coating on the "Eclipse Advantage" mirror is sprayed with a spray gun containing a silver emulsion, in order to increase the thickness of the reflective layer, and to thereby increase its reflectivity to approximately twice that of the existing "Eclipse Advantage" mirror.

In use, the flat panel display 30 of an existing display device such as a television set is mounted to a vertical support structure using any of a variety of standard methods. The mounting frame and mirror assembly 10 is extended over the flat panel display 30, thereby interposing the one-way mirror 18 between the viewer and the front surface 30F of the flat panel display 30. Upon selective activation of the

display device, the viewer is able to see the image 32
projected upon the front surface 30F of the flat panel
display 30 through the reflective surface of the mirror.
When the display device has been inactivated, the reflective
5 outer surface of the one-way mirror 18 obscures the flat
panel display 30.

In conclusion, herein is presented a mounting frame and
mirror assembly for use in conjunction with an existing flat
panel display, having a one-way mirror for selectively
10 obscuring the flat panel display when the display is not
activated. The invention is illustrated by example in the
drawing figures, and throughout the written description. It
should be understood that numerous variations are possible,
while adhering to the inventive concept. Such variations are
15 contemplated as being a part of the present invention.